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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/978,019	10/17/2001	Richard F. Bellas	2105.2335	3829

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EXAMINER

BUSHEY, CHARLES S

ART UNIT PAPER NUMBER

1724

DATE MAILED: 10/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center">Office Action Summary</p>	<p>Application No.</p> <p>09/978,019</p>	<p>Applicant(s)</p> <p>BELLAS ET AL.</p>	
	<p>Examiner</p> <p>Scott Bushey</p>	<p>Art Unit</p> <p>1724</p>	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 September 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,6-18 and 21-59 is/are pending in the application.
- 4a) Of the above claim(s) 3,29-43 and 54-58 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,6-18,21-28,44-53 and 59 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 7, 8, 10-13, and 44-48 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Evert (Figs. 1-3; col. 1, line 65 through col. 2, line 4; col. 2, lines 15-40; col. 2, line 55 through col. 3, line 5; col. 3, lines 35-37).

Applicants should note from the disclosure by Figure 1 of the reference, that the liquid issuing from the horizontally directed spray nozzles is “ejected in a direction” substantially in the horizontal plane, as recited by applicants’ instant claims.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

Art Unit: 1724

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Evert.

Evert (Figs. 1-3; col. 1, line 65 through col. 2, line 4; col. 2, lines 15-40; col. 2, line 55 through col. 3, line 5; col. 3, lines 35-37) as has been applied above substantially discloses applicant's invention as recited by instant claim 6, except for the water inlet pressure being between 100 and 140 psi. It would have been obvious for an artisan at the time of the invention, to operate the reference apparatus at any convenient water inlet pressure, including that as recited by instant claim 6, since as stated by the Court, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. Note *In re Aller et al*, 105 USPQ 233.

6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Evert as applied to claims 1, 2, 6-8, 10-13, and 44-48 above, and further in view of any one of Wittemann, Fletcher, Gray, or Damann.

Evert (Figs. 1-3; col. 1, line 65 through col. 2, line 4; col. 2, lines 15-40; col. 2, line 55 through col. 3, line 5; col. 3, lines 35-37) as has been applied above substantially discloses applicant's invention as recited by instant claim 9, except for the openings being arranged in a plurality of horizontal rows.

Wittemann (Fig. 1), Fletcher (The Figure; page 2, lines 22-37), Gray (The Figure; page 1, lines 63-80), and Damann (Figs. 1 and 2; col. 2, line 54) each alternatively disclose gas/liquid contact apparatus wherein a liquid inlet diffuser is provided with multiple openings therein to atomize the liquid for enhanced contact, the holes being arranged in a plurality of horizontal

Art Unit: 1724

rows. It would have been obvious for an artisan at the time of the invention, to modify the water diffuser of Evert to include a large number of water atomization holes therein, the holes being arranged in plural horizontal rows, in view of any one of the alternative secondary references, since such would provide for high efficiency contact between the phases and a structure that would be easily machined using conventional fabrication tools.

7. Claims 14-18, 21-28, 49-53, and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Evert as applied to claims 1, 2, 6-8, 10-13, and 44-48 above, and further in view of either Fletcher or Gray.

Evert (Figs. 1-3; col. 1, line 65 through col. 2, line 4; col. 2, lines 15-40; col. 2, line 55 through col. 3, line 5; col. 3, lines 35-37) as has been applied above substantially discloses applicant's invention as recited by instant claims 14-18, 21-28, 49-53, and 59, except for the openings being arranged in a plurality of horizontal rows with openings in adjacent rows not being in vertical alignment.

Fletcher (The Figure; page 2, lines 22-37) and Gray (The Figure; page 1, lines 63-80) each alternatively disclose gas/liquid contact apparatus wherein a liquid inlet diffuser is provided with multiple openings therein to atomize the liquid for enhanced contact, the holes being arranged in a plurality of horizontal rows with openings in adjacent rows not being in vertical alignment. It would have been obvious for an artisan at the time of the invention, to modify the water diffuser of Evert to include a large number of water atomization holes therein, the holes being arranged in plural horizontal rows with openings in adjacent rows not being in vertical alignment, in view of either of the alternative secondary references, since such would provide for

Art Unit: 1724

high efficiency contact between the phases and a structure that would be easily machined using conventional fabrication tools.

Applicant should also note that wherein the simple change in form or shape of a known element of the prior art, when such change is not shown to provide an unexpected result, has long been considered an obvious modification, it would have been obvious for an artisan at the time of the invention, to provide the water inlet spray openings, as taught by Evert, in any convenient shape, including slots or a combination of slots and holes. Note *In re Dailey et al*, 149 USPQ 47. Furthermore, it would have been obvious for an artisan at the time of the invention, to operate the reference apparatus at any convenient water inlet pressure, including that as recited by instant claim 16, since as stated by the Court, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. Note *In re Aller et al*, 105 USPQ 233. Lastly, wherein a change in size of a known element, such as the diameter of the openings, when such change is not shown to provide an unexpected result, has long been considered an obvious modification, it would have been obvious for an artisan at the time of the invention, to provide the water inlet spray openings, as taught by Evert, in any convenient size, including that as recited by instant claim 18, since as stated by the Court, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. Note *In re Aller et al*, 105 USPQ 233. Applicant should also note *In re Rose*, 105 USPQ 237 and *In re Reven*, 156 USPQ 679, with respect to the size of the openings.

Response to Arguments

8. Applicant's arguments filed September 15, 2003 have been fully considered but they are not persuasive.

With respect to applicant's argument that the Evert reference does not disclose or suggest ejecting the liquid in a direction that is substantially in a horizontal plane, such is simply incorrect. Wherein the nozzles of Evert are arranged precisely within a horizontal plane, the liquid issuing therefrom must be "ejected in a direction substantially in a horizontal plane". It is irrelevant to the instantly recited claims as to whether or not all or most of the liquid ejected from the nozzles remains within the horizontal plane of the nozzles some distance downstream from the nozzles. The claims simply do not address the position of the liquid streams downstream of their point of ejection from the nozzles and therefore such has no bearing on the determination of patentability of the instantly claimed method and apparatus. Further, applicant's argument on page 16 of the response filed September 15, 2003, that Evert does not disclose or suggest that openings in adjacent rows of openings are not in vertical alignment is irrelevant since the Examiner has not relied upon Evert as teaching such. This would be clear from an honest reading of the rejection statements found in this and the previous Office action.

In response to applicant's argument that the secondary references would not motivate one having ordinary skill in the art to modify the Evert reference, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ

Art Unit: 1724

871 (CCPA 1981). Clearly, each of the secondary references utilizes a spray nozzle structure having plural unaligned openings in an effort to maximize the contact efficiency between the phases, which would provide a skilled artisan all of the motivation necessary to look to any one of the secondary references to modify Evert in an effort to improve contact between the gas and liquid within the contact chamber.

9. Applicant's arguments with respect to claim 59 have been considered but are moot in view of the new grounds of rejection, which was necessitated by applicant's adding of new claim 59 to the prosecution of the instant application.

Conclusion

10. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Art Unit: 1724

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott Bushey whose telephone number is (703) 308-3581. The examiner can normally be reached on Monday-Thursday 6:30AM-5:00PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Blaine R. Copenheaver can be reached on (703) 308-1261. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Applicant should note that after approximately December 9, 2003, Scott Bushey can be reached at (571) 272-1153, and Blaine R. Copenheaver may be reached at (571) 272-1156.

Scott Bushey
Primary Examiner
Art Unit 1724

csb
10-21-03


10-21-03